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TWENTY-FIVE YEARS OF THE AMERICAN MICROSCOPICAL SOCIETY—A RETROSPECT

By WILLIAM C. KRAUSS

Age — worthily borne — challenges admiration: youth when coupled with grace and beauty has in itself the attributes, by nature endowed, which command appreciation; but when past this period and by nature tried it merits approbation and all honor and respect due its presence and best wishes for the future. Twenty-five years of existence is sufficient to test crucially the value of any union or organization. A quarter century of growth will suffice to explain the *raison d'être* of any society devoted to the study of science, art or literature. Within that period defeats and disasters can readily shatter the foundations of any movement not conceived in truth and nurtured on it. The special object of organization must have been fully realized or else utterly defeated within that period of time.

With this brief introduction let us analyze the life history of this growth, hybrid in character, which has produced fruit along so many varied lines of research—zoological, botanical and mineralogical.

The American Microscopical Society was born when the microscope was a crude instrument, just beginning to be remodeled and recognized as a most valuable means of scientific investigation.

Records show that up to 1840 little if any use was made of the compound microscope in America, and no instrument maker had appeared who could supply an instrument of any kind. Thus it was when in this year the United States exploring expedition to the South Seas under Commodore Wilkes was fitting out, no instrument could be furnished the expedition by any of the makers of scientific or philosophical instruments in America. In this dilemma a private individual was applied to, and an instrument was finally loaned by Dr. Paul Goddard, of Philadelphia. It was a French microscope of inferior make, but the best obtainable at that time. Since then the instrument has come into general use, and in certain departments of the manufacture of microscopes this country has become preeminent. Scarcely had the English microscope makers published those inventions and discoveries which rendered achromatic microscopes really possible, and elevated the instrument from the position of a mere scientific plaything to that of an instrument calculated for the most accurate investigations, before the elder Spencer succeeded in producing lenses which at once took a front rank among the art productions of the world. The stimulus given to the perfection of the microscope by the elder Spencer and Tolles no doubt influenced the action of the founders of this Society and a call for a preliminary meeting was issued.

At the birth of the Society the microscope was still a rather crude and homely instrument. The stand was fitted with stage and draw-tube only while the instrument itself was more a toy for semi-scientific diversion than for thorough scientific investigation. Laboratory methods and technique were simple and uncomplicated. Through the labors of Spencer and Tolles the objective, however, had reached a high degree of perfection. As early as June, 1850 Mr. Spencer had produced a 1/12-inch objective, having the then marvelous aperture of 174½° as measured by the old sector method. This innovation aroused the wrath of his competitors, who declared that the limit of usefulness could not exceed 135°. These high-angled objectives were not only useful but were possessed of such great and wonderfully accurate defining power that their fortunate possessors considered them as superior to any lenses ever made. Spencer's idea was to combine large angular aperture with definition, and in this respect he scored a signal success over his competitors who were only able to increase the angle at the expense of the definition. The Spencer lens was awarded the gold medal at the Paris Exposition of 1878. These lenses were achromatic lenses, that is, corrected for two colors only.

The development of the microscope has been marvellous and the instrument of today has little resemblance to its prototype of twenty-five years ago. Fitted with body and draw-tube, coarse and fine adjustment, stage, mechanical stage and sub-stage attachments, as the Abbé condenser system, diaphragms and iris diaphragm, swinging mirror, micrometers and nose pieces, it stands without its armament in the same light as the modern battleship does to the frigates of 1861. In armament the contrast is equally great. The powerful apochromatic oil-immersion lenses, with and without collar adjustment, and the compensating eye-pieces of today represent the highest degree of perfection and make further progress almost inconceivable.

Laboratory methods and technique have kept pace hand in hand with the microscope, and the introduction of the anilin dyes, making double and triple stains possible, has revolutionized the histological laboratory and, by segmental division as it were, produced the pathological, embryological and, most important of all, the bacteriological laboratories. The discoveries of Koch, Neisser, Kitasato, Friedländer, Eberth, Klebs, Loeffler, Pasteur and many others were made possible only by the introduction of the anilin dyes and the oil-immersion lens to correctly interpret the results. Thus arose the science of bacteriology, the foundation stone of modern medical science and the vantage point from which are directed all efforts to nullify and antagonize the specific virus engendered by the various bacterial organisms.

Twenty-five meetings of the Society have been held and, judging from the *Transactions,* it must be admitted that progression rather than retrogression has been the watchword. These meetings have been held in various cities, three times each in Buffalo, in Columbus, and in Pittsburg, twice in Detroit and in Rochester, and once in Indianapolis, Elmira, Chicago, Cleveland, Chautauqua, Washington, Madison, Brooklyn, Ithaca, New York, Denver, St. Louis, Toledo, and Syracuse.

The attendance upon these meetings has not been satisfactory for the past five years, for reasons known and appreciated by us all. The attendance generally upon scientific societies which publish a volume of transactions is relatively small compared with the total membership because a complete report of the meeting is furnished to those remaining at home. The formation of new societies having closely related objects in view, the breaking up of microscopical science into specialties each devoted to a single branch of the work, and the innumerable national, state, county and local medical societies—have all contributed their mite and their mightiest to rob this Society of its equal and due share of attendance and patronage. This complaint is not pertinent to this Society alone, but applicable to many other national organizations. If one were so inclined and had sufficient means at command he might devote his entire time to attendance at scientific meetings, they being held the year round in one place or another. The non-professional attendant must choose, therefore, which of the many meetings he can afford to attend. If he be a member of this organization, we only ask—but ask we must—that he attend one of our meetings at least every third year. This is the substance of a rule adopted by the American Neurological Association and membership is forfeited unless a valid excuse for absence is presented by the member himself. I might here remark that this rule is rigidly enforced as I myself had occasion to learn and some such rule adopted by this society might not be inopportune.

The officers of the Society, with hardly a single exception, have been most faithful to their duty and much of its success has depended upon the energy and perseverance displayed by those in command.

Our presiding officers have been scientists of national and even international reputation, and the list is one of which any learned society might well feel proud. Our first president, Doctor R. H. Ward of Troy, N. Y., who also presided at the second meeting in Buffalo in 1879 is still hale and hearty.

Five of our presidents have enjoyed the distinguished honor of having been elected a second time—Doctor R. H. Ward in 1878 and 1879; Professor H. L. Smith in 1880 and 1885; Honorable Jacob D. Cox, Ex-Governor of Ohio, in 1884 and 1893; Professor T. J. Burrill in 1886 and 1904; and Professor D. S. Kellicott in 1888 and 1898. Professor Kellicott's untimely death, in April, 1898, prevented his presiding at Syracuse and Professor V. A. Moore, the second vice-president, acted as president.

Of our presidents five have passed away—Honorable Jacob D. Cox, August 4, 1900; Professor William A. Rogers, March 1, 1898; Professor David S. Kellicott, April 13, 1898; Professor Edward W. Claypole, in August, 1901; Professor Hamilton L. Smith, only recently deceased. The obituaries of these men are published in Volumes XX, XXII and XXIII of the *Transactions*.

Fifteen of our past presidents still retain membership in the society and are ex-officio members of the Executive Committee—Doctor R. H. Ward, of Troy, N. Y.; Professor J. D. Hyatt, of New Rochelle, N. Y.; Professor Albert McCalla, of Chicago, Ill.; Professor T. J. Burrill, of Urbana, Ill.; Doctor George E. Fell, of Buffalo, N. Y.; Doctor Frank L. James, of St. Louis, Mo.; Doctor Marshall D. Ewell, of Chicago, Ill.; Professor Simon H. Gage, of Ithaca, N. Y.; Doctor A. Clifford Mercer, of Syracuse, N. Y.; Doctor William C. Krauss, of Buffalo, N. Y.; Professor A. M. Bleile, of Columbus, O.; Professor C. H. Eigenmann, of Bloomington, Ind.; Professor C. E. Bessey, of Lincoln, Neb.; Professor V. A. Moore, of Ithaca, N. Y., (acting president); and Professor E. A. Birge, of Madison, Wis. Two of our past-presidents have been made honorary members—Doctor R. H. Ward and Professor Hamilton L. Smith.

The first secretary, H. F. Atwood, of Rochester, N. Y., is still with us. He held office for one year and was succeeded by H. Jameson of Indianapolis. In 1880 A. H. Tuttle was elected and filled the position for two years. D. S. Kellicott, then residing in Buffalo, was next elected and remained secretary until 1888, when T. J. Burrill succeeded him and was secretary until 1891. William H. Seaman, of Washington, was elected in 1891 and reelected in 1894 but resigned in 1895. He was followed by William C. Krauss, of Buffalo, who held office until 1898 and in turn was succeeded by the present (1904) efficient secretary, Henry B. Ward of Lincoln, Neb.

The Society has been fortunate in the selection of men of business ability to act as treasurers. The funds of the Society have been carefully guarded and a surplus at the end of the business year has attested the high financial ability of these men. J. B. Marvin was the first treasurer, followed by H. F. Atwood, of Rochester, in 1879. George E. Fell, of Buffalo, was elected treasurer in 1880 and remained in the office until 1888. He was succeeded by S. M. Mosgrove of Urbana, O., who retained office until 1890 and was followed by C. C. Mellor, of Pittsburg. In 1895 Magnus Pflaum was elected and was treasurer until 1899, being succeeded by Mr. J. C. Smith, of New Orleans, the present able incumbent.

Besides guarding the funds the treasurer has acted as custodian of the Spencer-Tolles Fund and has had the investment of this fund under his charge. In 1899 the Executive Committee at the Columbus meeting proposed a new officer to have the charge of this fund and Magnus Pflaum, of Pittsburg, was elected custodian, remaining so till the present time.

At the seventh annual meeting of this Society, held at Rochester, N. Y., August 19 to 22, 1884, a memoir of Robert B. Tolles, but recently deceased, was read by Dr. George E. Blackham, of Dunkirk, N. Y. In the remarks following by different members of the Society, a resolution was offered by W. H. Breasley, of Detroit, that W. A. Rogers be requested to prepare a subscription paper and to receive subscriptions for a monument to Robert B. Tolles. As a substitute motion Professor T. J. Burrill, of Champaign, Ill., offered the following, which was seconded and adopted:

> *Resolved,* That W. A. Rogers, H. J. Detmers and George E. Blackham be made a committee to report upon proper action, on the part of the Society, in memory of Robert B. Tolles.

Mr. Beasley then offered the following resolution:

> *Resolved,* That the same committee be asked to consider and report upon a suitable memorial for Charles A. Spencer,

which was also seconded and unanimously carried.

Thus the ground was broken for the foundation of a monument to Spencer and Tolles, which was to be as durable and ineffaceable as a granite shaft, but which, unlike the stone, was to shed warmth and awaken a quickening in the minds of all those fortunate enough to come within its light.

At the next meeting of the Society, held at Cleveland, O., August 18 to 21, 1885, Dr. George E. Fell, of Buffalo, N. Y., reported the condition of the Spencer-Tolles Memorial Fund as follows:

> *To the Officers and Members of the American Society of Microscopists:*
>
> In accordance with the resolutions on a Spencer and Tolles Memorial Fund, the following report is presented: The first cash subscription to this fund was made by the Royal Microscopical Society, December 17, 1884. Since that time the subscriptions have come in so slowly that this report will present but a meager list of subscribers, and, in view of the unanimous adoption of the resolution establishing the fund, not nearly so large a list as should have been expected. Professor Wm. A. Rogers, with his characteristic action in furthering any of the projects of the Society, has offered to subscribe $25 and guarantees $15 additional, contingent, however, upon a concerted action of the Society towards the increase of the fund. He suggests that the income of the fund be awarded in prizes for specific original research. The subscriptions to the fund are given below:

Royal Microscopical Society	$25.20
J. D. Cox	5.00
D. S. Kellicott	5.00
George E. Fell	5.00
John Kruttschnitt	5.00
F. S. Newcomer	5.00
Chas. Shepard	5.00
E. H. Griffith	5.00
Total	$60.20

Respectfully submitted,
GEORGE E. FELL,
Treasurer and Custodian.

The fund grew slowly; custodian gave way to custodian, each doing his best to swell the amount as much as possible. As was the case in our Civil War, when there were many generals but only *one* general, so with the Spencer-Tolles Fund, there have been many custodians but only *one* custodian, and to-day the American Microscopical Society acknowledges its debt of gratitude to our present custodian, and the many friends of Spencer and Tolles, in and out of our Society, extend their hearty congratulations to our genial, energetic, and aggressive friend, Magnus Pflaum, of Pittsburg. It might be pertinent to suggest at this time that the Society take some official action to connect the name of Herbert R. Spencer to those of Charles A. Spencer and Robert B. Tolles, so that this fund may stand as a monument to the genius of the three men instead of the two older, as it *now* officially stands. The total amount of this fund and contributors to it, as reported to the Denver meeting may be found in Volume XXIII, page 267 of the Society's *Transactions.*

The work of the Society is represented by the volumes of *Transactions,* twenty-five in number, which have been edited by the secretaries. These volumes have appeared annually except during the years 1893 and 1894 when it was thought advisable to publish the volume in four parts.

What of the future? Has the American Microscopical Society fulfilled its mission, or is there still a field for it in new directions? Has it accomplished all its friends set out for it to do, or has it progressed only along certain paths of research? Has it helped in any material degree to make the microscope one of the most useful instruments in the armamentarium of the modern scientist? Does its work, as represented in the twenty-five volumes of *Transactions,* compare favorably with that of other learned societies? Will these volumes serve as a monument to its worth and industry and insure for it lasting remembrance? Has it greater opportunity for future usefulness by amalgamation with other organizations—particularly the American Association for the Advancement of Science,—or does it stand for greater efficiency by itself? Is there place and opportunity for a greater microscopical society, or do the special organizations cover the field satisfactorily?

These are questions that must appeal to every wellwisher of our Society and questions that must be answered by you and your representatives on the Executive Committee. As for me, I only wish to answer the question regarding the greater microscopical society, by referring to the answer given by a Boston gentleman who, on being asked whether the consolidation of the suburbs of Boston into a Greater Boston was possible said: " A larger Boston is always possible but a greater Boston, never! "